The status of the larger waterstriders in The Netherlands (Heteroptera: Gerridae)

by

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ABSTRACT. — Of each of the three species *Gerris najas, G. paludum* and *G. rufoscutellatus*, maps indicating fluctuations in distribution within The Netherlands are given, based on recent collecting data, literature and museum specimens. In addition, life cycles and general distributions are discussed.

Introduction

By larger waterstriders are meant the representatives of *Gerris* belonging to the subgenera *Limnoporus* Stål and *Aquarius* Schellenberg. Three species occur in The Netherlands: *Gerris (Limnoporus) rufoscutellatus* Latreille, *Gerris (Aquarius) najas* DeGeer, and *Gerris (Aquarius) paludum* Fabricius (Nieser, 1982). A special distributional study of *G. najas* in The Netherlands was published by Higler (1967). Data on the other two species are rather scanty, but some can be found in Blöte (1930) and Reclaire (1932, 1951).

The object of this paper is to compile the available data, both from literature and collections, to see how these species have fared in The Netherlands in the last decades.

Acknowledgements

Many people helped by providing records or allowing us to study collections in their care. Apart from the Museums of Amsterdam, Leiden and Wageningen we had also cooperation of several provincial Water Boards. Two colleagues are to be mentioned specifically, dr. H. P. J. J. Cuppen (Milieuraad, Apeldoorn) for a number of important recent records and dr. L. W. G. Higler (Rijksinstituut voor Natuurbeheer, Leersum) for providing the notes and other materials on which his 1967 paper was based.

Identification

The three species dealt with in this publication can be distinguished from other NW European species of *Gerris* and between each other by the following characters.

1. Length of antenna subequal to or slightly longer than half the bodylength; hind femur longer than intermediate femur. (Length 13-17 mm, nearly always macropterous, pronotum warm reddish brown, first antennal segment shorter than 2 and 3 combined) ..... *Gerris (Limnoporus) rufoscutellatus*
— Antennae shorter than half the body length; hind femur shorter than or subequal to intermediate femur 2
2. Length 13-17 mm, apices of connexiva long and pointed; hind margin of seventh sternite of ♂ with simple concavity. (First antennal segment longer than 2 and 3 combined) 3
— Length up to 14 mm, apices of connexiva not long and pointed; hind margin of seventh sternite of ♂ with double concavity (except in *lateralis* Schumacher which has a length under 12 mm) ..... *Gerris (Gerris)*
3. Apices of connexiva reaching up to or beyond the apex of the abdomen. (Pronotum laterally with a yellow line; macropters and brachypters) ..... *Gerris (Aquarius) paludum*
— Apices of connexiva do not reach the apex of the abdomen. (Pronotum laterally dark, sometimes with a yellowish dot; the rare macropters have a narrow lateral line on pronotum) ..... *Gerris (Aquarius) najas*

VERENIGINGSNIEUWS

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ENTOMOLOGEN IN DEN VREEMDE ...

Met de huidige (dat wil zeggen, ten tijde van dit schrijven heersende) weersomstandigheden zal menig entomoloog evenals Prikkebeen dromen van een schoon kapellenland, waar het niet rond half april nog zo'n 10^{o} vriest. Helaas, Nederland is niet het enige land, waar het voorjaar in winterslaap lijkt te zijn gegaan. Het is dan ook zeer te hopen, dat er ergens deze zomer in Europa nog insekten zijn waar te nemen. Mocht U denken, dat dat in Frankrijk het geval zal zijn en richt U daar Uw plannen op, dan is het volgende wellicht de moeite van het lezen waard.

Op grond van een besluit van 3 augustus 1979 is de vangst, het bezitten, kweken, vervoeren, gebruik, koop en verkoop van een aantal insektesoorten in heel Frankrijk verboden. Deze soorten zijn:

Vlinders:

Papilio hospiton
Papilio phorbanta
Parnassius apollo arvernensis
Parnassius apollo meridionalis
Parnassius apollo francisci
Parnassius phoebus
Zerynthia rumina f. honoratii
Pieris ergane
Colias palaeno (vrouwtje)
Boloria aquilonaris
Proclossiana eunomia
Euphydryas desfontainii
Salamis augustina
Coenonympha tullia
Coenonympha oedipus (vrouwtje)
Lycaena dispar (vrouwtje)
Lycaena helle (vrouwtje)
Maculinea alcon (vrouwtje)
Maculinea teleius brdigalensis (vrouwtje)
Lysandra bellargus (vrouwtje) coelestis.
Zygaena rhadamantus
Zygaena vesubiana
Pericallia matronula
Rhyparioides metelkana
Arctinia caesarea
Graellsia isabellae

Kevers:

Chrysocarabus auronitens cupreonitens
Chrysocarabus auronitens subfestivus
Chrysocarabus solieri bonnetianus
Carabus auratus honnorati ventouxensis
Dynastes hercules hercules

Orthoptera:

Prionotropis rhodanica
Prionotropis hystrix azami

Daarnaast zijn er ook meer algemene, lokale en departementale verboden. Het is maar dat U het weet.

In Zwitserland is nu de vangst van vlinders in het beroemde Laquintal (Tessin) verboden. Misschien omdat de rondlopende entomologen in de weg liepen bij de ontsluiting van het dal via de aanleg van een grote weg?

Ietsje verderop, in Joegoslavië, is de vlindervangst geheel gebonden aan vergunningen. En over Griekenland schreef ik al eens eerder.

Ik wens U alvast een prettige vakantie toe. R. de Jong

NIEUWE AANWINSTEN VOOR DE BIBLIOTHEEK NR. 125

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Ecological entomology, 1984. (C.B.Huffaker and R.L.Rabb eds.). (New York, J. Wiley).
Fishelson, L., 1985. Orthoptera, Acridoidea. Fauna Palestina: Insecta III.
The genetics and biology of Drosophila vol. 3e (M.Ashburner, H.L.Carson and J.J.N.Thompson eds.). (Academic Press, London).
Guide to the natural history of the isle Wight, 1909. (William Wesley, London)
Hickin, N.E., 1965. Forest refreshed. The autobiographical notes of a biologist. (Hutchinson, London).
Higler, L.W.G., 1969. De chromosomen van Oxyethira fagesii (Guinard, 1879) en Limmephilus flavicornis (Fabricius, 1787) etc. (doct. verslag).
Higler, L.W.G., 1970. Praktische gids voor zoetwaterdieren (Zeist).
Hoffmann, J., 1967-1970. Faune des Trichoptères du Grand-Duché de Luxembourg. (Arch. Inst. Grand-Ducal Luxemb.)
Hunt, Morgan. T., 1928. The theory of the gene. (Yale Univ. Press, New Haven).
Jolivet, P., 1986. Les fourmis et les plantes. Un exemple de coévolution. (Boubée, Paris).
Kolenati, F.A., 1848. Genera et species Trichopterorum. Heteropalpoidea.
Kolenati, F.A., 1859. Genera et species Trichopterorum. Aequipalpidae.
Kuchlein, J.H., z.j. Neureclipsi bimaculata. Deel I en II. (stencil).
Lackschewitz, P., 1922. Die Neuropteren und Trichopteren des Ostbaltischen Gebietes. (Arch. Naturk. Ostbaltikums 14, 3)
Lackschewits, P., 1928. Nachträge zu den Neuropteren und Trichopteren des Ostbaltischen Gebietes. (Arch. Naturk. Estlands 14, 4)
Lambeck, H.J.P., 1975. Descriptions of female ectodermal genital structures of eighteen species of syrphid flies etc. (verslag, ongepubliceerd)
Lampert, K., 1925. Das Leben der Binnengewässer. (Tauchnitz, Leipzig).
Lang, K., 1931. Faunistisch-ökologische Untersuchungen in einigen seichten oligotrophen BZW. Dystrophen Seeën in Südschweden. (Acta Univ. Lund.27)
Martynov, A.V., 1934. Trichoptera Annulipalpa I. (Opred. Faune SSSR 13)
Mauvais, G., 1927. La faune littorale du Lac de Neuchâtel. Thèse. (Bull. Soc. neuchat. Scienc. nat. 51).
Meuche, A., 1938. Die Fauna im Algenbewuchs. (Arch. Hydrobiol. 34)
Michejda, J., 1954. An analysis of the ecological conditions in springs and streams of the Góry Stolowe. (Publ. biol. Commission 14, 6)
Moreton, B.D., 1950. Guide to the British insects. An aid to identification. (MacMillan, London).
Moretti, G., 1958. I lago Trasimeno. (Quaderni Sez. Perugina Soc. Ital. Biol. sperim. 21).
Mosely, M.E., 1920. The dry-fly fisherman's entomology. (Routleige, London).
Muehlen, M. von zur und G.Schneider, 1920. Der See Wirzjerw in Livland. Biologie und Fischerei. (Arch. Naturk. Ostbaltikums 14, 1).
Muttkowski, R.A., 1918. The fauna of Lake Mendota. A qualitative and quantitative survey with special reference to the insects. (Trans. Wisconsin Acad. of Sciences, Arts and Letters 19).
Nadig, A., Hydrobiologischen Untersuchungen im Quellen des schweizerischen Nationalparkes im Engadin. Inaugural-Dissertation.
Needham, J.G., 1936. The animal world. Life of our earth. (Chapham & Hall, London).

Needham, J.G and J.T.Lloyd, 1937. The life of inland waters. (Comstock, New York).
Needham, J.G. and P.R.Needham, 1951. A guide to the study of fresh water biology. (Constable & Co, London).
Neeracher, F., 1910. De Inselfauna des Rheins und seiner Zuflüsss bei Basel. Inaugural-Dissertation.
Newman, E., 1841. Familiar introduction to the history of insects. (J. van Voorst, London).
Nielsen, A., 1948. Postembryonic development and biology of the Hydroptilidae. (Biol. Skrift. Danske Vidensk. Selskab 5, 1).
Nitsche, G., 1932. Studien über die Tierwelt schlesischer Thermen und Mineralquellen. Inaugural-Dissertation (Breslau).
Obenberger, J., 1952. Entomologie I. Anatomie, Morfologie a Embryologie
Palm, E., 1986. Nordeuropas Pyralider. (Danmarks Dyreliv 3).
Palmer, R., 1927. Marvels of pond life. (Butterworth, London).
Pesta, O., 1929. Der Hochgebirgssee der Alpen . (Die Binnengewässer 8)
Pictet, F.J., 1834. Recherches pour servir à l'histoire et à l'anatomie des Phryganides. (Genève).
Rensch, B., 1934. Kurze Anweisung für zoologisch-systematische Studien. (Akadem. Verlagsgesellschaft).
Rensch, B., 1947. Neuere Probleme der Abstammungslehre. Die transspezifische Evolution. (F. Enke Verlag, Stuttgart).
Roszmäszler, E.U., 1875. Das Süsswasser-Aquarium. (Mendelsfohn, Leipzig).
Ruttner, F., 1952. Grundriss der Limnologie (Hydrobiologie des Süsswassers). (Walter de Gruyter, Berlin).
Sammlung Naturwissenschaftlicher Praktika vol. 7. Praktikum der Suẞswasserbiologie I. Teil. Die Organismen des fliessendes Wassers. (Borntraeger, Berlin).
Schassmann, W., 1920. Die Bodenfauna Hochalpiner Seen. (Arch. Hydrobiol. Suppl. Band 3, 1)
Symposium on Neotropical Lepidoptera, 1985. (G. Lamas ed.). Arequipa, Peru, 1983. (Lepidoptera Research Foundation, Santa Barbara).
Thienemann, A., 1912. Der Bergbach des Sauerlandes. Faunistisch-biologische Untersuchungen. (Int. Rev. Gesammt. Hydrobiol. Hydrograph., Biol. Suppl. 4).
Thienemann, A., 1923. Die Gewässer Mitteleuropas. Eine hydrobiologische Charakteristik ihrer Haupttypen. (Handbuch Binnenfischerei Mitteleuropas 1).
Thienemann, A., 1954. Die Binnengewässer in Natur und Kultur. (Springer, Berlin).
Tobias, W., 1961. Die Gehäusebauten der Köcherfliegen (Trichoptera) unter Berücksichtigung der bis 1961 erschienenen Literatur (Privat-Drück).
Tomaszewski, W., 1928. Beiträge zur Kenntniss der Tierwelt schlesischer Bergbäche. (Abh. Naturf. Gesellsch. Görlitz 31, 2).
Tomaszewski, C., 1970. Studia nad ewolucja przystosowawcza larw chruścików (Trichoptera). (Lódź, Uniwersytet Lódzki).
Tsuda, M., 1942. Zur Kenntnis der Koreanischen Trichopteren, und, Japanische Trichopteren I, Systematik. (Mem. Coll. Science, Kyoto Imperial University, Series B, 17, 1)
Ulmer, G., 1913. Aus Seen und Bächen. Die niedere Tierwelt unsere Gewässer. (Verlag von Quelle und Meyer, Leipzig).
Untersuchungen über die Fauna der Gewässer Böhmens. Band 1-5, 1888-1901. (Buchhandl. F.Rivnác).
Vaillant, F., 1956. Recherches sur la faune Madicole de France, de Corse et d'Afrique du Nord. (Memoires Mus. nat. Hist. nat. sér. A vol. 11).

Vecht, J. van der, 1964. Taxonomen in conflict. Inaugurale rede. (Brill, Leiden).
Walker, C.E., 1898. Old flies in new dress. How to dress dry flies with the wings in the natural position and some new wet flies. (Lawrence & Bullen, London).
Wiegmann, A.F.A. und J.F.Muthe, 1848. Handbuch der Zoologie. (Lüderitz, Berlin).
Wray, D.L., 1950. Second supplement to Insects of North Carolina. (Departm. Agriculture,Raleigh, North Carolina).

NIEUW TIJDSCHRIFT

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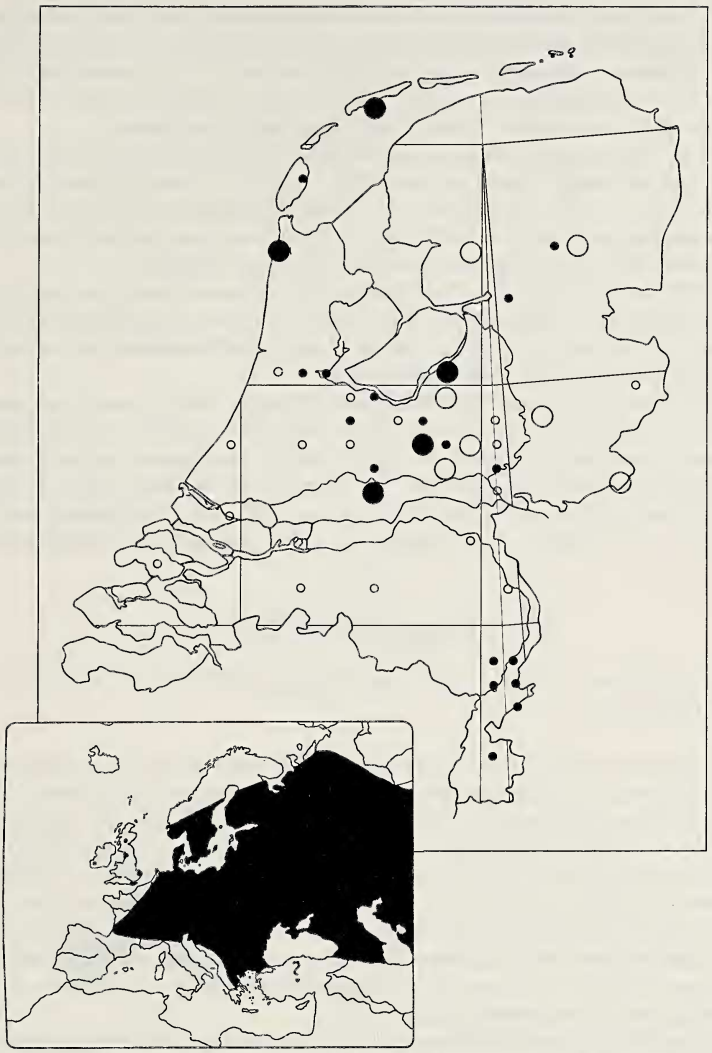

Fig. 1. Distribution of *Gerris rufoscutellatus* Latreille in The Netherlands and Europe.
○ record before 1926; • record between 1926-1950; ◯ record between 1951-1975; ● record after 1975.

Gerris (*Limnoporus*) *rufoscutellatus* Latreille, 1807

Gerris rufoscutellatus Latreille, 1807: 136 Poisson, 1957: 218-219, fig. 156; Nieser 1982: 40, figs 88, 95.

The species is common in Central and Eastern Europe (fig. 1). According to Kanyukova (1982) it also occurs in Asia, up to Japan. American records refer to related species. In NW Europe the species is not common. Leston (1956) concludes that *G. rufoscutellatus* is an irregular immigrant in the British Isles and does not breed there.

The Dutch records are compiled in fig. 1. The data on which the maps are based, can be found in more detail in the databank of E.I.S. (RMNH, Leiden). Most Dutch records, espe-

cially in the West have been singletons. In view of the available data there are probably a few reproducing populations in the East and Centre of The Netherlands, but many records refer to migrating individuals. Although the total number of catches of *G. rufoscutellatus* is about the same as for *G. paludum* the former species is more evenly distributed. It seems to be a widespread but scarce species. At Weerribben a large population has established.

In Europe *G. rufoscutellatus* occurs on various types of stagnant waters, from fresh to slightly brackish, and on quietly flowing streams. This variability in habitat is probably also due to the strong migratory habits of the species. According to Vepsäläinen (1973) larval habitats are more restricted, predominantly semipermanent or permanent ponds and lake shores with fairly strong insolation, dense shore vegetation and modest aquatic vegetation.

The life cycle has been studied by Vepsäläinen (1974a), whose observations were essentially based on populations in S. Finland. He found adults throughout the season from mid May to mid October. Larvae have been found from mid June to mid September and on one occasion larvae from 2nd to 5th instar were still found on 4.X.

The species is univoltine from Finland to Austria although there are some indications that a few early ♀♀ may oviposit the same season they moult. It is essentially a monomorphic macropterous species, retaining the capacity of flight during the reproductive period although a few brachypterous specimens have been found. There are no data available on life cycles of Dutch populations. The earliest record in the season was on 13.III.1949 (Wageningen) and the latest one was on 21.X.1948 (also at Wageningen). All Dutch specimens in collections are macropterous.

Gerris (*Aquarius*) *najas* (DeGeer, 1773)

Cimex najas DeGeer, 1773: 311; *Gerris najas* Poisson, 1957: 222-223, fig. 159-160; Nieser 1982: 40, figs 69, 87, 96.

We are inclined to consider *Gerris cinereus* (Puton) a separate species, as it has been found together with *G. najas* in S. Portugal and S. Spain (Nieser, 1983 and unpublished). In the Balearic Islands *G. najas* only has been found (Nieser & Montes, in press), N. African specimens seen by us are *G. cinereus*. Interesting is an observation by Thiery (1981) who recorded *G. najas* in Morocco at altitudes over 1000 m and *G. cinereus* at lower altitudes. The distribution in Europe (Nieser, 1978) is given in fig. 2. It is essentially a European species with only a few records from Russia, especially in the Leningrad area (Kanyukova, 1982). In the East Mediterranean *G. najas* has been found in Greece (Zimmermann, 1982). Records from Turkey and the Levant apparently refer to *G. ventralis* (Hoberlandt, 1948; Nieser & Moubayed, in press) which is the common streamdwelling *Aquarius* there.

A special study of the status of this species in The Netherlands was made by Higler (1967) who compiled the data then available and visited nearly all localities with reasonable possibility of occurrence of the species. His data are shown in fig. 2, which also indicates the decline of the species. The actual situation is even worse as several of the quadrants, in which Higler found the species contained two or more populations. We have found more than one population only in quadrants 20-30 and 20-31 (Table 1).

So the decline already noted by Higler has continued strongly and the status of this species in The Netherlands is now precarious. We have observed only two strong populations (1000 or more specimens in late summer), the remaining populations count only smaller numbers. The localities in which we found the species fulfill the conditions mentioned by Higler (1967), viz. meandering brooks in woods with shaded water. An additional factor may be the absence of run-off of excess dung. Some of the streamlets near Breda (26-24) had stretches which looked like suitable habitats. The most important change since 1967 near those localities seems to be more intensive agricultural practices, especially increased cultivation of maize, which is accompanied by heavy dressing.

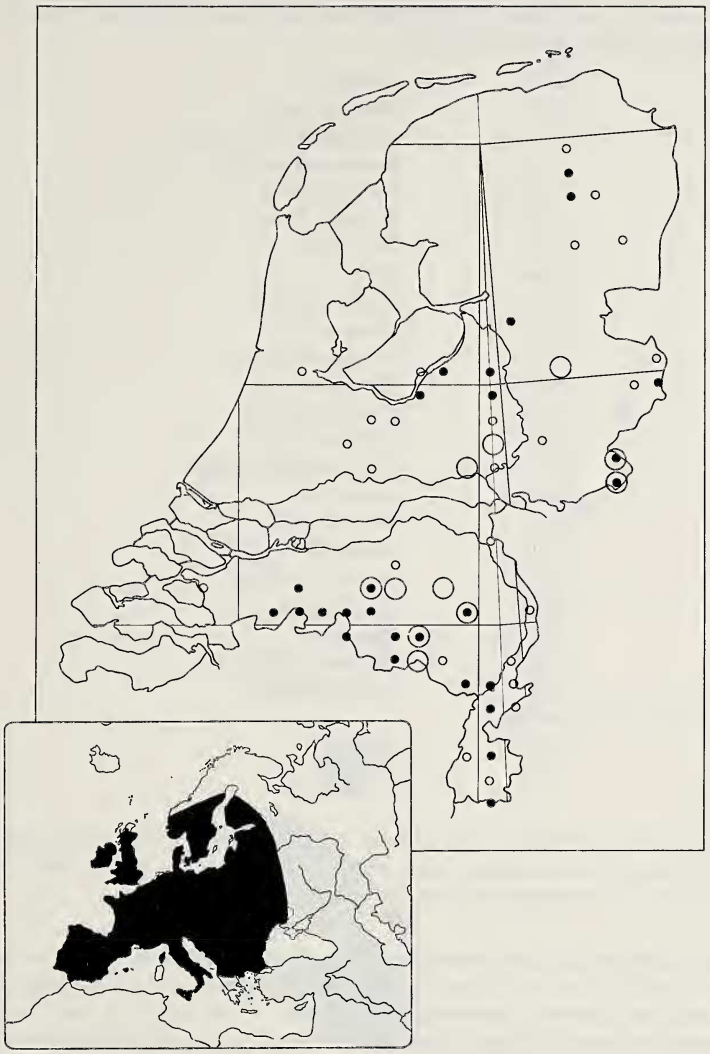

Fig. 2. Distribution of *Gerris najas* (DeGeer) in The Netherlands and Europe.
○ published records based on specimens collected before 1960, not found back by Higler (1967); • published records based on specimens collected in 1960-1966, not found back in 1983-1985; ◉ published records based on specimens collected in 1960-1966, still present in 1983-1985; ◯ unpublished record (from collections) based on specimens collected before 1960, not mentioned by Higler (1967) and not found back in 1983-1985 either.

It has been suggested to place *G. najas* on a list of protected animals. Although this would do no harm, to prevent extinction of the species in The Netherlands it will be necessary to protect its few remaining habitats, rather than issuing a prohibition to collect an incidental specimen.

In Europe *G. najas* has been found on medium sized to large streams and, less frequently, on large ponds, lakes and canals. On streams it is mostly found at quiet places with low current, open water shaded by trees, often near bridges or overhanging banks. In The Netherlands *G. najas* is found exclusively on medium sized streams, along stretches with shade.

Table 1. Presence (+) or absence (−) in 1983/5 of *Gerris najas* in localities where this species was reported to be present by Higler (1967).

Province	E.I.S.	Locality	1983/5
Drenthe	08-30	Zeegserloopje	−
	09-29	Ruimsloot near Anreep	−
Overijssel	17-32	Ruenenbergerbeek	−
Gelderland	20-30	Henxelse Beek	+
	20-30	Ratumse Beek	+
	21-30	Willinkbeek	+
	21-30	Slinge	+
	16-20	Hoophuizerbeek	−
	16-22	Klaarbeek	−
	16-21	Tongerense Beek	−
N. Brabant	25-14	Broekloop	−
	25-14	Chaamse Beek	−
	26-14	Galderse Beek	−
	26-17	Reusel near Baarschot	−
	26-21	Astense Aa	+
Limburg	29-21	Ittersche Beek	−
	29-21	Thornder Beek	−
	29-22	Grathemse Beek	−
	30-22	Middelgraaf	−
	32-22	Bisse Beek	−
	32-22	Hulsberger Beek	−
	34-22	Geul near Epen	−
Two new localities can be added:			
N. Brabant	25-17*	Beerze	+
	27-19	Tongelreep	+

Two specimens in the Nieser collection from the population in EIS grid reference 25-17 are probably the source of the reference Vught without exact locality by Higler (1967). In 1960/66 the species did not occur within the boundaries of Vught.

The Dutch population at Asten was monitored in 1984. Development of oocytes starts in the beginning of April. By the end of April most specimens are in copula at daytime and oocytes are fully developed. Larvae I appear around mid June. By the end of August there were already a number of fresh adults and in the second half of September most specimens had had their final moult. Although small numbers of larvae I appear later in the season, most of these do not develop (they are probably eaten by elder specimens (Brinkhurst, 1966)) so that at a given time in summer the larvae of the population are nearly all of about the same age and instar, and there is only one generation/year. These observations agree with those of Brinkhurst (1966) and Von Mitis (1937). Macropterous specimens have not been observed by us and are extremely rare at Windermere (England). Those found there had, moreover, undeveloped indirect flight muscles (Brinkhurst, 1966). In the South of France (Poisson, 1957) and Portugal (Nieser, 1983) macropters are less rare.

A popular article on behaviour of *G. najas*, based on observations of a, now extinct, Dutch population at Hulshorst was published by Leentvaar (1941). Schreijer & Vertegaal (1976) published some observations on the population at Asten.